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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,912	09/18/2001	Paul H. Moose	10764-003-999	9919
24341	7590	09/07/2005	EXAMINER	
MORGAN, LEWIS & BOCKIUS, LLP. 2 PALO ALTO SQUARE 3000 EL CAMINO REAL PALO ALTO, CA 94306			TORRES, JUAN A	
			ART UNIT	PAPER NUMBER
			2631	

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/955,912

Applicant(s)

MOOSE, PAUL H.

Examiner

Juan A. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Allowable Subject Matter

The indicated allowability of claims 7 and 8-15 is withdrawn in view of the newly discovered reference(s) to "IEEE Std 802.11a-1999: "Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications High-speed Physical Layer in the 5 GHz Band". Rejections based on the newly cited reference(s) follow.

Claim Objections

Claims 7-15 are objected to because of the following informalities: the recitation in lines 1-3 of claims 7-15 "A method for synchronizing a receiver to a transmitter comprising the following steps: receiving a digital signal from the receiver"; is improper, it is suggested to be changed to "A method for synchronizing a receiver to a transmitter comprising the following steps: receiving a digital signal from the transmitter". Appropriate correction is required.

Claim 12 is objected to because of the following informalities: the recitation in lines 1-3 of claim 12 "The method of claim 9 comprising the additional steps of: correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values"; is improper because claim 9 doesn't include these limitations, it is suggested to be changed to "The method of claim 11 comprising the additional steps of: correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values". Appropriate correction is required.

Claim 13 is objected to because of the following informalities: the recitation in lines 1-3 of claim 13 "The method of claim 9 comprising the additional steps of: correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values to create a correlation value"; is improper because claim 9 doesn't include these limitations, it is suggested to be changed to "The method of claim 11 comprising the additional steps of: correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values to create a correlation value". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 15 recites the limitation " correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values " in lines 17-18 of claim 15. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smart (US 6735255 B1) in view of the IEEE Std 802.11a-1999: "Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications High-speed Physical Layer in the 5 GHz Band.

As per claim 7 Smart discloses a method for synchronization of a receiver to a transmitter (figure 4, column 8 lines 7-64), comprising receiving a digital signal, demodulating the symbols of the digital signal (figure 4 block 402 column 8 lines 7-64), and correcting for a fractional portion of the frequency offset (figure 4 block 406 column 8 line 18 to column 9 line 6). Smart doesn't disclose combining modulation values from two long sync symbols. The 802.11a standard discloses combining modulation values from two long sync symbols (section 17.3.3 figure 110. Smart and 802.11a standard are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the synchronization technique disclosed by Smart with the two long sync symbols disclosed by the 802.11a standard. The suggestion/motivation for doing so would have been to synchronize an 802.11 standard compliant device (802.11a standard page 12 section 17.3.3). Therefore, it would have been obvious to combine Smart with 802.11a standard to obtain the invention as specified in claim 7.

As per claim 8 Smart discloses a method for synchronization of a receiver to a transmitter (figure 4, column 8 lines 7-64), comprising receiving a digital signal, demodulating the symbols of the digital signal (figure 4 block 402 column 8 lines 7-64), and correcting for a fractional portion of the frequency offset (figure 4 block 406 column

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8 line 18 to column 9 line 6). Smart doesn't disclose extracting vectors of modulation values of data sub-carriers with progressive trial integer offsets. The 802.11a standard discloses extracting vectors of modulation values of data sub-carriers with progressive trial integer offsets (section 17.3.3 figure 110). Smart and 802.11a standard are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the synchronization technique disclosed by Smart with the modulation values of data sub-carriers disclosed by the 802.11a standard. The suggestion/motivation for doing so would have been to synchronize an 802.11 standard compliant device (802.11a standard page 12 section 17.3.3). Therefore, it would have been obvious to combine Smart with 802.11a standard to obtain the invention as specified in claim 8.

As per claim 9 Smart and the IEEE Std 802.11a-1999 disclose claim 8. The IEEE Std 802.11a-1999 also discloses dividing each vector by long sync symbol modulation values to obtain channel transfer functions (section 17.3.2.1 page 7 and section 17.3.3 page 13). Smart and 802.11a standard are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the synchronization technique disclosed by Smart with the modulation values of data sub-carriers disclosed by the 802.11a standard. The suggestion/motivation for doing so would have been to synchronize an 802.11 standard compliant device (802.11a standard page 12 section 17.3.3). Therefore, it would have been obvious to combine Smart with 802.11a standard to obtain the invention as specified in claim 9.

As per claim 10 Smart and the IEEE Std 802.11a-1999 disclose claim 9. The IEEE Std 802.11a-1999 also discloses estimating odd frequency values for each of the channel transfer functions (section 17.3.2.1 page 7 and section 17.3.3 page 13).

As per claim 11 Smart and the IEEE Std 802.11a-1999 disclose claim 10. Smart also discloses estimating odd frequency values is performed using an interpolation algorithm (figure 3 block 12 column 3 lines 33-64; column 9 line 50 to column 10 line 17).

As per claim 12 Smart and the IEEE Std 802.11a-1999 disclose claim 9. Smart also discloses correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values; and selecting a correlation value to identify an integer frequency offset number (figure 4 block 410 column 10 lines 50-56; and column 10 line 57 to column13 line 36).

As per claim 13 Smart and the IEEE Std 802.11a-1999 disclose claim 9. Smart also discloses correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values to create a correlation value (figure 4 block 410 column 10 lines 50-56; and column 10 line 57 to column13 line 36); computing a magnitude of the correlation value (figure 4 output block 410 column 10 lines 50-56; and column 10 line 57 to column13 line 36); and selecting the largest magnitude of the correlation value to identify an integer frequency offset number (column 11 lines 57-63; figure 4 block 410 column 10 lines 50-56; and column 10 line 57 to column13 line 36; column 7 lines 14-40).

As per claim 14 Smart and the IEEE Std 802.11a-1999 disclose claim 9. Smart also discloses associating the largest magnitude of the correlation value with a channel transfer function (column 11 lines 57-63; figure 4 block 410 column 10 lines 50-56; and column 10 line 57 to column 13 line 36); using the channel transfer function to correct data symbols for amplitude and phase shifts (figure 4 blocks 404 and 406 column 8 lines 18-42).

As per claim 15 Smart discloses a method for synchronizing a receiver to a transmitter comprising the following steps receiving a digital signal from the transmitter (figure 4, column 8 lines 7-64); delaying the digital signal by a sample processing interval to produce a delayed signal (figure 4, blocks 408 column 10 lines 33-56); correlating the digital signal and delayed signal to create a correlator output (figure 4 block 410, column 8 lines 50-56); determining a phase shift of the correlator output corresponding to a maximum value of the correlator output wherein the phase shift is an estimate of the fractional portion of carrier frequency offset (column 11 lines 57-63; figure 4 block 410 column 10 lines 50-56; and column 10 line 57 to column 13 line 36; column 7 lines 14-40); extracting long sync symbols from the digital signal (column 2 lines 12-32); correcting for a fractional portion of frequency offset (figure 4 block 406 column 8 line 18 to column 9 line 6); correlating the interpolated odd frequency values of the channel transfer function and the actual odd frequency values (figure 4 block 410, column 8 lines 50-56); and selecting a correlation value to identify an integer frequency offset number (column 11 lines 57-63; figure 4 block 410 column 10 lines 50-56; and column 10 line 57 to column 13 line 36; column 7 lines 14-40). Smart doesn't disclose

extracting vectors of modulation values of data sub-carriers with progressive trial integer offsets; dividing each vector by long sync symbol modulation values to obtain channel transfer functions. The 802.11a standard discloses extracting vectors of modulation values of data sub-carriers with progressive trial integer offsets (section 17.3.3 figure 110); dividing each vector by long sync symbol modulation values to obtain channel transfer functions (section 17.3.2.1 page 7 and section 17.3.3 page 13). Smart and 802.11a standard are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the synchronization technique disclosed by Smart with the two long sync symbols disclosed by the 802.11a standard. The suggestion/motivation for doing so would have been to synchronize an 802.11 standard compliant device (802.11a standard page 12 section 17.3.3). Therefore, it would have been obvious to combine Smart with 802.11a standard to obtain the invention as specified in claim 15.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kim (US 6459679 B1) discloses a method and apparatus for synchronizing orthogonal frequency division multiplexing (OFDM) receiver using even and odd subcarriers. Schmidl (US 5732113 A) discloses Timing and frequency synchronization of OFDM signals using even and odd subcarriers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres
08-22-2005


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER